Effect of thermo-mechanical treatment on the current transport properties of Bi(Pb)-Sr-Ca-Cu-O superconductor tapes with nanopowder CoFe2O4 addition

ABSTRACT

We study the effect of various thermo-mechanical treatment on the current transport properties electrical Bi(Pb)-Sr-Ca-Cu-O tapes with nanopowder CoFe2O4 addition. We found that pinning strength of the tapes without intermediate pressing increases as the sintering temperature increases from 835°C to 855°C, whereas tapes applied with intermediate pressing have lower pinning strength compared with tapes without the pressing. On the contrary, self-field Jc of tapes without intermediate pressing decreases with increasing sintering temperature. Intermediate pressing are found effective to increase self-field Jc. The results obtained will be explained with the help of the XRD spectrums and SEM micrographs on the tapes.

Keyword: Bismuth-based superconductor tape; Pinning strength; Thermo-mechanical treatment; Transport properties